Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Allocation of Spectrum in the 5 GHz Band to Establish a Wireless Component of the National Information Infrastructure	)	RM-8653
	)	
	)	

AND

In the Matter of	)	
	)	
Petition for Rulemaking To Allocate the 5.1-5.35 GHz Band and Adopt Service Rules for a Shared Unlicensed Personal Radio Network	)	RM-8648
	)	
	)	

To: The Acting Secretary

COMMENTS OF THE PART 15 COALITION

The Part 15 Coalition ("the Coalition") submits these comments to the petition for rulemaking filed by Apple Computer, Inc. (the "NII Band Petition"), and by the Wireless Information Networks Forum (the "WINForum Petition"), in the above-referenced matters. The Coalition represents a group of companies that produce radio devices designed to operate on an unlicensed basis in compliance with the Commission's Part 15 rules.[1] In response to the Commission's inquiry,[2] the Coalition has advocated the creation of a "Part 16" band for unlicensed radio technologies in which such technologies would be

---

[1] A list of member companies is attached as Appendix A.

[2] See Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, First Report and Order and Second Notice of Proposed Rulemaking, ET-94-32 ¶ 58 (rel. Feb. 17, 1995) (*hereinafter* "First Report and Order").

allowed to develop free from interference from licensed radio services, government users, and industrial, scientific, and medical ("ISM") devices.[3] Only if dedicated spectrum is available for unlicensed use will wireless technologies be able to provide the kind of broadband, high speed, highly reliable communications services necessary for the development of the NII.

The NII Band Petition represents a significant step towards the creation of Part 16 and an unlicensed band for wireless exchange of data along the information superhighway — which Apple refers to as the "NII Band." Specifically, the NII Band Petition seeks an allocation of 300 MHz of spectrum for unlicensed wireless communications devices and the adoption of "Part 16" rules to govern operations in the band.

The Coalition supports the NII Band Petition. Although numerous details regarding service rules and operating requirements in the NII Band need to be resolved, the NII Band, as proposed by Apple, would permit equitable access to the band so that current unlicensed Part 15 technologies may evolve into higher-bandwidth, advanced information technologies and become an integral part of the NII. Moreover, the NII Band, as proposed, would "accommodate most, if not all, part 15 devices deployed in, or currently planned for," the 5725-5875 MHz band.[4] Thus, the "NII Band," would complement and encourage innovation of current Part 15 operations, which will continue to provide countless public and private benefits well into the twenty-first century.

---

[3] See, e.g., Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, ET-94-32, Comments of the Part 15 Coalition (filed Mar. 20, 1995).

[4] NII Band Petition at 32.

I. To Realize Fully The Potential Benefits Of Unlicensed Radio Technologies, A Dedicated Band Of Spectrum For Unlicensed Services Is Needed.

The success of unlicensed radio technologies has far exceeded early expectations for Part 15 operations. Today, this market is comprised of millions of devices, hundreds of applications, scores of different technologies, and countless hundreds of millions of dollars of investment.[5] Schools, hospitals, utility companies, and the general public have greatly benefited from low-cost deployment of communications and monitoring services using unlicensed radio technologies now available in the marketplace. As the Commission has acknowledged, what may once have seemed little more than a niche service now promises to provide benefits to "virtually every person and business in the nation."[6]

The public need for unlicensed services shows no sign of diminishing.[7] As information and communications become further integrated into everyday life, the need for fast, reliable, wireless information exchange will become more important. Indeed, after studying the growth and uses of Part 15 technologies, the NTIA concluded that unlicensed radio services will be critically important to the development of the NII.[8]

Moreover, if sufficient bandwidth is available to them, unlicensed technologies will be capable of supporting community-wide networks that will

---

[5] See Report to Ronald H. Brown, Secretary, U.S. Department of Commerce, Regarding the Preliminary Spectrum Reallocation Report ¶ 13 (rel. Aug. 9, 1994).
[6] First Report and Order ¶ 32 .
[7] See Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, Notice of Inquiry, 9 FCC Rcd 2175, 2176 n.14 (1994); Preliminary Spectrum Reallocation Report, NTIA, 3-10, 3-12 & 13 (Feb. 1994).
[8] Letter from Larry Irving, NTIA Administrator, to Reed Hundt, FCC Chairman, ET Docket Nos. 94-32, 94-124, and PR Docket No. 93-61 (Dec. 12, 1994) at 1 (*hereinafter* "Irving Letter").

allow less-developed and rural communities that do not have access to wired and licensed-wireless alternatives to reap the full benefits of the NII. Community networks will help assure that all Americans, of all economic and social classes, have the opportunity to be informed of local issues and events, to access resources such as public libraries, to transact business with local government agencies from their own home or office, and to communicate with their friends, neighbors, and business associates.

As Apple notes in its petition, however, unlicensed technologies operating under Part 15 are subject to certain constraints that will inhibit them from satisfying the growing need for wireless communications. Under Part 15, unlicensed technologies must not cause interference to other non-Part 15 users of the spectrum and they are not themselves protected from interference. As a result, many advanced applications, and those requiring extremely high reliability, have so far remained wired or, where they require wireless connections, have not developed at all. As Part 15 technologies become more sophisticated and ubiquitous, this lack of interference protection will become more critical.

The development of unlicensed radio technologies under Part 15 is also inhibited by increasing congestion in the Part 15 bands. For instance, the Commission has recently allocated the 902-928 MHz band for Automatic Vehicle Monitoring/Location and Monitoring Services ("AVM/LMS ").[9] Part 15 devices operating in this band will face increasing problems with interference as AVM/LMS systems are constructed and become operational.

---

[9] Amendment of Part 90 of the Commission's Rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, Report and Order, PR Docket No. 93-61 (rel. Feb. 6, 1995).

Similarly, the 2400-2483.5 MHz band is becoming less attractive to developers of Part 15 technologies due to the growing use of the band by millions of microwave ovens and other ISM devices. For example, new industrial lighting systems are being deployed in this band that may substantially undermine use of the band by current-generation wireless LANs and other high speed wireless data communications technologies. Use of the 2400-2483.5 MHz band by ISM devices is only expected to increase as new applications are discovered and exploited.[10]

The 8.5 GHz above 40 GHz that the Commission has recently proposed to allocate for unlicensed uses,[11] offers a better approach in terms of setting aside dedicated frequencies for unlicensed use, but, given the long lead times needed to develop equipment to operate in this region of the spectrum, it does not offer a practical, near-term alternative for most unlicensed technologies. Moreover, due to oxygen absorption effects at higher frequencies, these bands are not well suited for medium-range, high-speed, outdoor data links, which will be necessary for the deployment of community networks and which promise to be a vital component of the NII. Thus, if a wide variety of new and innovative Part 15 devices are to be developed, additional spectrum below 40 GHz will be required.

Both the Commission and NTIA agree that the availability of adequate spectrum is crucial to the continued success of Part 15 technologies. The Commission has concluded that providing spectrum for Part 15 operations

---

10 See Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, NPRM, ET-94-32, Comments of International Microwave Power Institute at 2 (rel. Nov. 8, 1994) (listing new ISM applications in the 2.4 GHz band).

11 See Amendment of Parts 2 and 15 of the Commission's Rules to Permit Use of Radio Frequencies Above 40 GHz for New Radio Applications, 9 FCC Rcd 7078, 7086 (rel. Nov. 8, 1994).

would promote the "introduction of new services and devices and the enhancement of existing services and devices .... [which] will create new jobs, foster economic growth, and improve access to communications by industry and the American public."[12]

Similarly, the NTIA has stated that the availability of a "long-term, stable regulatory environment" is critical to the development of Part 15 technologies and that the "Commission should consider designating spectrum for some nonlicensed uses or establishing a new nonlicensed radio service and associated allocations."[13]

For these reasons, the Coalition and others have advocated the allocation of dedicated spectrum for unlicensed communications technologies and the creation of Part 16 rules to govern operations in this band.[14] As with Part 15, there would be no licensing under Part 16 and access to the Part 16 spectrum for both entrepreneurs and the public would be uncomplicated and inexpensive. Unlike Part 15, however, Part 16 would offer protection to unlicensed technologies operating in the Part 16 band from interference from licensed radio services and government users. In addition, ISM devices introduced into the NII Band (according to NTIA, few if any such devices have already been deployed in the 5 GHz band) could be subjected to regulations limiting their emissions that would facilitate use of the band by wireless communications devices.

---

12 First Report and Order ¶ 1.

13 Irving Letter; see also NTIA Final Spectrum Report (Feb. 1995).

14 See, e.g., Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, ET-94-32, Comments of the Part 15 Coalition (filed Mar. 20, 1995); see also Irving Letter.

II. The Proposal To Create An NII Band In The 5 GHz Range Will Complement Currently Deployed Part 15 Products And Will Promote The Development Of Future Unlicensed Technologies.

The NII Band Petition represents a significant step towards the creation of Part 16 and an unlicensed band. In its petition, Apple proposes that the Commission allocate 300 MHz of spectrum in the 5 GHz range for an NII band. In this NII Band no entities will be licensed to provide service on an exclusive basis. Rather, any technology that complies with the band sharing rules would be permitted to operate within the band. Importantly, technical standards established for operation in the band "would be set at the minimum level necessary to assure equal access, giving manufacturers the flexibility to design a variety of devices suited to different types of communications needs."[15] Thus, as Apple has described it, the NII band would allow for advanced "Part 15-like" operations in a protected environment.

Among the bands of spectrum identified for allocation to the NII Band is 5725-5875 MHz, which is currently allocated for Part 15 use, ISM, and amateur radio. Although the 5 GHz Part 15 band has not been used extensively for Part 15 technologies in the past, this undoubtedly will change as current equipment is deployed and new devices are developed that can operate in a cost-effective manner in this portion of the spectrum. As a result, the NII Band Petition and the use of this band is of critical importance to the Coalition.

Because the proposed NII Band will foster the growth and development of Part 15 technologies, and because it will offer a protected environment in which those technologies may operate, the Coalition supports the NII Band Petition. As the Commission contemplates the allocation of a band of spectrum for dedicated unlicensed use, several principles should be considered.

---

[15] NII Band Petition at 2.

First, the rules governing operation in the band should be broad enough to encompass a wide variety of wireless communications devices.[16] Whereas extremely high data rates may be necessary for certain technologies, and hence permitted in the NII Band, they should not be required so as to foreclose the NII Band to other technologies.[17]

Second, "[t]he rules governing the NII Band must assure that all devices retain an equitable right to access and share the spectrum resource."[18] Such equitable access is necessary for at least two reasons. To begin with, service rules that favor certain configurations or technologies will bias future development efforts toward those configurations and technologies and will therefore limit the scope of innovation in wireless communications. Moreover, to the extent that any one type of transmission is given priority in the NII Band, many of the advantages of unlicensed use are lost. Experience in the Part 15 bands demonstrates that technology will adapt to the spectrum environment. Thus, so long as the service rules provide an even "playing field," a multitude of services using the NII Band will thrive and artificial regulatory prioritization will be unnecessary.

Third, the service rules for the new NII Band must "accommodate most, if not all, Part 15 devices deployed in, or currently planned for, this band."[19] Many new and valuable technologies are already being developed by Part 15

---

16 See id. at 25.

17 The WINForum petition appears to call for a singular, as-yet-undemonstrated, high speed communications mode that goes beyond (and would not be compatible with) the existing HIPERLAN standard. See WINForum Petition at 17-18.

18 NII Band Petition at 25; contra WINForum Petition at 19-20 (proposed spectrum sharing protocol would prioritize different types of traffic).

19 NII Band Petition at 32.

manufacturers for the 5 GHz Part 15 band. Although the NII Band may open the way for new and different technologies at 5725-5875 MHz, existing technologies, and the investments made in them, should not be forfeited. Thus, the 5 GHz Part 15 band should be allocated for use as part of the NII Band only if the NII Band will complement existing and planned Part 15 technologies (*i.e.*, if it will accommodate devices operating in accordance with Sections 15.247 and 15.249 of the Commission's rules).

Fourth, the new NII Band must have sufficient spectrum to support and integrate a wide variety of services, technologies, and applications, which may depend upon narrow or wideband transmissions. One of the principal benefits of the NII band will be the creation of area-wide wireless networks which will be capable of serving university campuses, industrial facilities, military bases, or other facilities at which distributed communications will be desired. These community networks will not only increase the communications capability and efficiency of those already having access to the NII, it will also promote service to traditionally underserved or economically disadvantaged communities by making the NII available at a significantly lower cost than is possible using a wired network. However, to provide comparable service, a substantial amount of spectrum will be required to support the wireless NII. For this reason, the Coalition supports Apple in its request for 300 MHz of spectrum for the NII Band.[20]

Finally, the Part 15 industry should have a significant part in drafting the service rules that will govern the new NII Band.[21] Part 15 manufacturers have acquired substantial expertise designing equipment that will operate in an

---

[20] See NII Band Petition at 1; see also WINForum Petition at 15 & n.4 (400 MHz ultimately needed).

[21] See id. at 33.

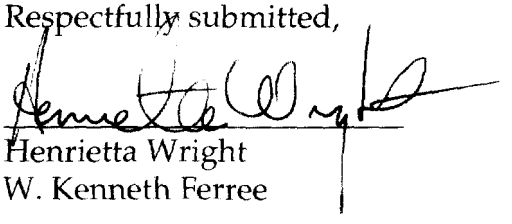
unlicensed environment. The contribution that these manufacturers can make to the successful allocation of an NII Band and the development of new Part 16 rules would be invaluable.

As outlined above, the NII Band Petition encompasses these principles and, to the extent that it does so, the Coalition supports the petition. These important principles should guide the Commission in creating an NII Band, particularly if it is to employ spectrum at 5725-5875 MHz in which Part 15 technologies are currently being developed and deployed. The combination of adequate spectrum and efficient spectrum sharing rules would create an environment in which unlicensed technologies could thrive.

CONCLUSION

For the reasons stated herein, the Coalition supports the petition for rulemaking filed by Apple Computer, Inc.

Respectfully submitted,



Henrietta Wright
W. Kenneth Ferree

GOLDBERG, GODLES, WIENER & WRIGHT
1229 19th Street, NW
Washington, DC 20036

Its Attorneys

July 10, 1995

Appendix A

PART 15 COALITION COMPANIES

Personal/mobile computing, especially for wireless access to wide-area networks (e.g. Internet, "National Information Infrastructure")

Apple Computer	Cupertino, CA
Metricom	Los Gatos, CA
Tetherless Access	Fremont, CA

Wireless local area networking products for general purpose data applications, including mobile computing

California Microwave	Sunnyvale, CA
National Semiconductor	Santa Clara, CA
Proxim	Mountain View, CA
Selectec	San Diego, CA
Stanford Telecom	Sunnyvale, CA
WINDATA	Massachusetts
Xircom	Calabasas, CA

Cordless phones for consumers and business, including wireless PBX systems

Cincinnati Microwave	Cincinnati, OH
Cobra Electronics	Chicago, IL
Omnipoint	Colorado Springs, CO
ROLM	Santa Clara, CA
SpectraLink	Boulder, CO
Tatung Telecom	Mountain View, CA
Uniden America	Indiana

Special-purpose portable data terminals, for retail/point-of-sale, inventory management, transaction automation and other business applications

Granite Communications	Nashua, N.H.
Intermec	Seattle, WA
Symbol Technologies	Long Island, San Jose
Telxon	Akron, OH

Wide area (metro, regional) wireless systems and networks for business applications and public utilities

CellNet Data Systems	San Carlos, CA
Cylink	Sunnyvale, CA
Persoft	Madison, WI
Metricom	Los Gatos, CA
Western Multiplex	Belmont, CA

Medical/health care systems incorporating wireless access

Clinicom	Boulder, CO
Wise Communications	Los Gatos, CA

Security, fire and life safety systems based on wireless communications

Ademco	Long Island, NY
Axonn/Life Point	New Orleans, LA
C&K Systems	Stockton, CA
Radionics	Salinas, CA

Other applications

GRE America	Belmont, CA	Wireless modems, transceivers for various applications
Intellon Corp.	Florida	Home automation and building control devices
Itron	Washington and Minnesota	Automatic meter reading systems
Recoton	Long Island, NY	Consumer audio products: wireless headsets, speakers
Sensormatic	Florida	Security tags for retail stores
Trimble Navigation	Sunnyvale, CA	Location systems based on global positioning satellite (GPS) technology
Voyager Technologies	Morgan Hill, CA	Provider of wireless technology and engineering design services

American Wireless	Seattle, WA
Comtech Info. Systems	Warwick, R.I.
Nav Guard	Seattle, WA
Real-Time Data	Seattle, WA
Summit Design	Renton, WA
Terk Technologies	Long Island
TrackMobile	San Diego, CA
Thompson CSF	Syracuse, N.Y.
Utilicom	Santa Barbara, CA

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Comments of the Part 15 Coalition was sent by first-class mail, postage prepaid, this 10th day of July, 1995, to each of the following:

* Chairman Reed Hundt
Federal Communications Commission
1919 M Street, N.W., Room 814
Washington, D.C. 20554

* Hon. James Quello
Federal Communications Commission
1919 M Street, N.W., Room 802
Washington, D.C. 20554

* Hon. Andrew C. Barrett
Federal Communications Commission
1919 M Street, N.W., Room 826
Washington, D.C. 20554

* Hon. Susan Paula Ness
Federal Communications Commission
1919 M Street, N.W., Room 832
Washington, D.C. 20554

* Hon. Rachelle B. Chong
Federal Communications Commission
1919 M Street, N.W., Room 844
Washington, D.C. 20554

* Ms. Ruth Milkman
Office of Chairman Hundt
Federal Communications Commission
1919 M Street, N.W., Room 814
Washington, D.C. 20554

* Mr. Rudy Baca
Office of Comm. Quello
Federal Communications Commission
1919 M Street, N.W., Room 802
Washington, D.C. 20554

* Mr. Keith Townsend
Office of Comm. Barrett
Federal Communications Commission
1919 M Street, N.W., Room 826
Washington, D.C. 20554

* Mr. David Siddall
Office of Comm. Ness
Federal Communications Commission
1919 M Street, N.W., Room 832
Washington, D.C. 20554

* Ms. Jill Luckett
Office of Comm. Chong
Federal Communications Commission
1919 M Street, N.W., Room 844
Washington, D.C. 20554

* Mr. Richard M. Smith
Chief
Office of Engineering & Technology
Federal Communications Commission
2000 M Street, N.W., Room 480
Washington, D.C. 20554

* Mr. Bruce Franca
Deputy Chief
Office of Engineering & Technology
Federal Communications Commission
2000 M Street, N.W., Room 480
Washington, D.C. 20554

* Mr. Mike Marcus
Office of Engineering & Technology
Federal Communications Commission
2000 M Street, N.W., Room 480
Washington, D.C. 20554

* Mr. Robert M. Pepper
Chief
Office of Plans & Policy
Federal Communications Commission
1919 M Street, N.W., Room 822
Washington, D.C. 20554

* Mr. Donald Gips
Deputy Chief
Office of Plans & Policy
Federal Communications Commission
1919 M Street, N.W., Room 822
Washington, D.C. 20554

* Mr. Michael Katz
Chief Economist
Office of Plans & Policy
Federal Communications Commission
1919 M Street, N.W., Room 822
Washington, D.C. 20554

* Mr. Thomas P. Stanley
Chief Engineer
Office of Plans & Policy
Federal Communications Commission
1919 M Street, N.W., Room 822
Washington, D.C. 20554

* Mr. Mark Corbitt
Office of Plans & Policy
Federal Communications Commission
1919 M Street, N.W., Room 822
Washington, D.C. 20554

Larry Irving, Esq.
National Telecommunications and Information Administration
14th Street & Constitution Avenue., N.W., Room 4898
Washington, D.C. 20232

Mr. Richard D. Parlow
National Telecommunications and Information Administration
14th Street & Constitution Avenue., N.W., Room 4898
Washington, D.C. 20232

Mr. William D. Gamble
National Telecommunications and Information Administration
14th Street & Constitution Avenue., N.W., Room 4099A
Washington, D.C. 20232

Mr. W. Bowman Cutter
National Economic Council
Old Executive Office Building
17th Street & Pennsylvania Avenue, N.W., Room 231
Washington, D.C. 20500

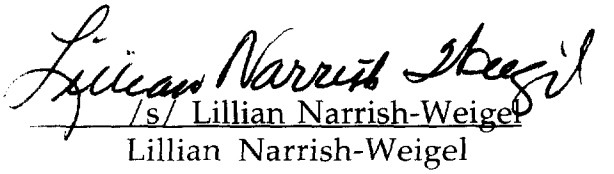
Mr. Tom Kalil
The White House
National Economic Council
Old Executive Office Building
17th Street & Pennsylvania Avenue, N.W., Room 233
Washington, D.C. 20500

Mr. Lionel S. Johns
The White House
Office of Science and Technology Policy
Old Executive Office Building, Room 423
17th Street & Pennsylvania Avenue, N.W.
Washington, D.C. 20506

Mr. Robert Bonometti
The White House
Office of Science and Technology Policy
Old Executive Office Building
17th Street & Pennsylvania Avenue, N.W.
Washington, D.C. 20506

Jim Lovette
Apple Computer, Inc.
One Infinite Loop
MS: 301-4J
Cupertino, California 95014

Michael Senkowski, Esq.
Eric W. DeSilva, Esq.
Wiley, Rein & Fielding
1776 K Street, N.W.
Washington, D.C. 20006



/s/ Lillian Narrish-Weigel
Lillian Narrish-Weigel

* By Hand